

C L A I M S

1. A heat recovery arrangement comprising:
5 a housing including a bathroom exhaust inlet, an exhaust
outlet, a bathroom exhaust airflow path through the housing
from the bathroom exhaust inlet to the exhaust outlet, a return
air inlet, a return airflow path through the housing from the
10 return air inlet to the exhaust outlet, an outside air inlet, a
supply air outlet, and an outside air path through the housing
from the outside air inlet to the supply air outlet; and
a heat recovery device transferring heat
between the bathroom exhaust airflow path, the return airflow
15 path and the outside airflow path.

2. The arrangement of claim 1 where the heat
recovery device extracts heat from the outside airflow path and
transfers heat to the bathroom exhaust airflow path and to the
20 return airflow path.

3. The arrangement of claim 1 where the heat
recovery device extracts heat from the bathroom exhaust airflow
25 path and from the return airflow path and transfers heat to the
outside airflow path.

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4. The arrangement of claim 3 wherein the heat transfer device includes a first portion for exchanging heat with the return airflow path and a second portion for exchanging heat with the bathroom exhaust airflow path.

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5. The arrangement of claim 4 wherein the bathroom exhaust inlet includes a first modulating device such as a damper and a first airflow monitor.

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6. The arrangement of claim 5 wherein the return air path includes a relief damper operable in conjunction with the first modulation device to balance the pressure between the bathroom exhaust airflow path and the return airflow path.

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7. The arrangement of claim 6 wherein the outside air inlet includes a second modulating device and a second airflow monitor.

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8. The arrangement of claim 7 wherein a single exhaust fan provides the motivating force for both the bathroom exhaust airflow path and the return airflow path.

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9. The arrangement of claim 8 including a divider wall between the return airflow path and the bathroom exhaust airflow path.

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10. The arrangement of claim 1 wherein a single exhaust fan provides the motivating force for both the bathroom exhaust airflow path and the return airflow path.

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11. The heat recovery arrangement of claim 3 wherein the heat recovery device sequentially extracts heat first from the bathroom exhaust airflow path and then from the return airflow path.

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12. A method of recovering energy comprising the steps of:

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providing a bathroom exhaust airflow path to an air handler;

providing a building exhaust airflow path to the air handler;

providing an outside airflow path through the air handler;

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extracting heat from the system exhaust and bathroom exhaust airflow paths; and

transferring the extracted heat to the outside air flow path.

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13. The method of claim 12 including the further step of providing a divider wall between the bathroom exhaust airflow path and the building exhaust airflow path.

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14. The method of claim 13 wherein the extracting and transferring steps include a rotating energy wheel.

5 15. The method of claim 14 wherein the extracting step includes the steps of sequentially extracting heat first from the bathroom exhaust airflow path and then from the system exhaust airflow path.

10 16. The method of claim 15 including the further step of using the heated outside air to condition a building.

15 17. The method of claim 13 wherein the extracting and transferring steps include a plate heat exchanger.

20 18. A method of recovering energy comprising the steps of:
providing a bathroom exhaust airflow path to an air handler;
providing a building exhaust airflow path to the air handler;
25 providing an outside airflow path through the air handler;
extracting heat from the outside air flow path; and
transferring the extracted heat to the system
30 exhaust and bathroom exhaust airflow paths.

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19. The method of claim 18 including the further step of providing a divider wall between the bathroom exhaust airflow path and the building exhaust airflow path.

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20. The method of claim 19 wherein the extracting and transferring steps include a rotating energy wheel.

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21. The method of claim 20 including the further step of transferring heat from the bathroom exhaust airflow path and the system exhaust airflow path to the outside airflow path if outside ambient temperatures are low.

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22. The method of claim 21 including the further step of using the heated outside air to condition a building.

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23. The method of claim 19 wherein the extracting and transferring steps include a plate heat exchanger.

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24. An arrangement for recovering energy comprising:

means for handling air;

means for providing a bathroom exhaust airflow path to the air handler means;

means for providing a building exhaust airflow path to the air handler means;

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means for providing an outside airflow path through the air handler means;

means for extracting heat from the system exhaust and bathroom exhaust airflow paths; and

5 means for transferring the extracted heat to the outside air flow path.

10 25. The arrangement of claim 24 further including a divider wall between the bathroom exhaust airflow path and the building exhaust airflow path.

15 26. The arrangement of claim 25 wherein the extracting and transferring means include a rotating energy wheel.

20 27. The arrangement of claim 26 wherein the extracting means includes means for sequentially extracting heat first from the bathroom exhaust airflow path and then from the system exhaust airflow path.

25 28. The arrangement of claim 27 further including using the heated outside air to condition a building.

30 29. The arrangement of claim 28 wherein the extracting and transferring means include a plate heat exchanger.

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30. An energy recovery system comprising:
a bathroom exhaust airstream path;
a return airstream path;
a divider wall between the bathroom exhaust
5 airstream path and the return airstream path;
an outside airstream path; and
a heat transfer device transferring heat from
the bathroom exhaust airstream and the return airstream path to
the outside airstream flow path.

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31. The system of claim 30 wherein the bathroom
exhaust airstream airflow path includes an airflow control
damper and an airflow monitor.

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32. The system of claim 31 further including a
relief damper working in conjunction with the airflow control
damper to balance the pressure between the bathroom exhaust
20 airstream path and the return airstream path.

33. The system of claim 32 further including a
single exhaust fan providing motivating force to both the
25 bathroom exhaust airflow stream path and the return airstream
airflow path.

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34. An energy recovery system comprising:
a bathroom exhaust airstream path;
a return airstream path;
a divider wall between the bathroom exhaust
5 airstream path and the return airstream path;
an outside airstream path; and
a heat transfer device transferring heat from
the outside airstream flow path to the bathroom exhaust
airstream and the return airstream path.

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35. The system of claim 34 wherein the bathroom
exhaust airstream airflow path includes an airflow control
damper and an airflow monitor.

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36. The system of claim 35 further including a
relief damper working in conjunction with the airflow control
damper to balance the pressure between the bathroom exhaust
20 airstream path and the return airstream path.

37. The system of claim 36 further including a
single exhaust fan providing motivating force to both the
25 bathroom exhaust airflow stream path and the return airstream
airflow path.

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